

IS ‘CDM’ LOSING ITS RELEVANCE IN THE CACOPHONY OF DEVELOPMENTS ?

JAYACHANDRAN. K¹ & BABU JOS²

¹Dy. Chief Engineer, FACT Ltd, Kochi & Research Scholar, School of Environmental Science, Mahatma Gandhi University, Kottayam, Kerala, India

²Dy. Chief Engineer, FACT Ltd, Kochi, Kerala, India

ABSTRACT

Development has been the crux of the homo-sapien’s sublime yearning since time immemorial and the summation of those desires and processes ultimately become the development script of that society. But as the world around us is distinctive in geography, climate, human race, culture, population density etc, the models, references, benchmarks, accounts and needs of development change from place to place and race to race. Analyzing the development saga the world over, the single vestige of development till now, all over the planet is the mutilation of primal natural resources without respect and concern for tomorrow. The earth resources were thought to be infinite in limit, but the depletion of natural resources was reflected by changed dynamics in global climate patterns, which made the human race to think on the development practices they follow. Climate change today is one area of convergence when the world thinks that anthropogenic factors have taken a toll on the natural and seasonal cycles. CDM was germinated to bring a new order for development, but the race of manipulations for fixing the blame of the situation between the nations at different stages of development has made a cacophony in the rhythm that was supposed to take care of sustained growth of flora and fauna with a planetary approach. The race of development has made the different groups stick to their ideologies, which muted the root need for a rhythmic global synergy in mitigation of factors detrimental to human development. Is it time that “clean” has to be replaced by “sustainable” in CDM so that the climate change boat is not capsized by the unrest within.

KEYWORDS: Climate change, Kyoto Protocol, CDM, SDM, Sustainable Development

Original Article

Received: Oct 12, 2015; **Accepted:** Oct 20, 2015; **Published:** Oct 28, 2015; **Paper Id.:** IJCSEIERDDEC20152

INTRODUCTION

Adlai Stevenson, in a speech to the UN Economic and Social Council, Geneva, Switzerland on 9 July 1965 remarked, “We travel together, passengers on a little spaceship, dependent on its vulnerable reserves of air and soil; all committed, for our safety, to its security and peace; preserved from annihilation only by the care, the work and the love we give our fragile craft. We cannot maintain it half fortunate, half miserable, half confident, half despairing, half slave - to the ancient enemies of man, half free - in a liberation of resources undreamed of until this day. No craft, no crew can travel safely with such vast contradictions. On their resolution depends the survival of us all.

Development is the wheel on which the human race has reached this level of evolution. “The term development

refers to the process of change and stability that occur throughout the human life span." (Papalia, Olds & Feldman, 2007). Eventhough there seems to be different understandings of development theories proposed in the various perspectives of thought and philosophy, the cognitive development theories which are concerned with the growth of thought processes and how these thought processes influence our understanding of the world around us, sketches the development potrait of human race in a relatively better way.

Is there an intrinsic residual effect of development that creates saturation to the development?. The anthropogenic interferences in the natural cycles around us has permeated a web of effects and changes in subtle ways, that resulted in characteristically visible but unpredictable changes in natural patterns of climate which is ultimately modifying the flora and fauna. One of the main limitations of present development plans is that the developmental patterns are embedded with inadequacy quotients of future perspective and the extent of retaining the new benefits is envisaged only during developmental cycles and not maintaining it in a sustainable perspectives for future. Sustainability means a capacity to maintain some entity, outcome or process over time and hence sustainable development needs to be emphasized to enable the capacity to be maintained in the growth phenomena worldwide over time (Rev. Samuel Asiedu & Michael Kwadwo Ntiamoah, 2015). But paradoxically, it is seen globally that, all the human activity connected with development and its idolized goals, is successfully maintained by exhausting natural resources on which human beings depend and exist. Hence is it time that the development debate focus on the ecological dependency of human economic and social development. The mutual effects between development and the environmental strains, degradation and the inherent perils caused by development needs to be focused on the concept of a sustainability debate.

While considering developmental activities, one cannot forget the role of corporates. Developmental goals also change from the perspectives in which it is viewed because for a corporate the meaning of sustainability is to anticipate and exist in longer periods of time than those covered by short, middle term goals. But for that long term sustainability the market conditions would be the determinantal force, and this in itself is a matrix reflected from ecological, economic and social systems in which the corporate is embedded.

The optimistic view of the economy growing that characterized most of the 20th century began to face challenges in the '60s, when, with the first phenomenon of smog, scarcity and pollution, the idea that economic growth driven by unlimited progress was collided with the evidence of the environmental consequences, of the pollution and the impact on human health (Carson R., 1962; Commoner B., 1971). In the sixties it was gradually recognized that there is a relationship of interdependence between economics and environment (Georgescu R., 1971) and to see the real economy as a subsystem open and circular which can work only with the support of its ecological foundation.

Even though there are different viewpoints on global warming and climate change, the detection of significant changes in the weather and climatic conditions over the last 100 years and the attribution of these changes to anthropogenic (manmade) emissions of greenhouse gases (GHGs) has now been accepted by the majority of the scientific community in the world. The 4th IPCC report predicts a sea level rise in the range of 28 to 98 cm under different projection scenarios by the year 2100, mainly due to melting of ice and thermal expansion of oceans.

The international initiative called United Nations Framework Convention for Climate Change (UNFCCC) was adopted in Rio- Earth summit in 1992, with a primary objective to stabilize GHG concentration in the atmosphere that would reduce interference with climate system. The visible impacts of climate change today help us to understand that in our run for development, anthropogenic factors have taken a toll on the natural and seasonal cycles.

THE CONCEPT OF CLEAN DEVELOPMENT MECHANISM

The Kyoto Protocol is an international agreement linked to the UNFCCC, which commits its parties by setting internationally binding emission reduction targets. The protocol under the principle of "common but differentiated responsibilities" was adopted in Kyoto, Japan, on 11th December 1997 and entered into force on 16 February 2005. There are now over 195 parties to the Convention and 192 Parties to the Kyoto Protocol. The Protocol's first commitment period started in 2008 and ended in 2012 and the follow up action plan, as a second commitment period is planned upto 2020.

In the Kyoto Protocol the signatory countries were expected to meet their GHG emission reduction targets primarily by national measures taken. The protocol also offers additional means to meet the country targets by way of three market based flexible mechanisms as given below.

- Clean Development Mechanism (CDM)
- International Emissions Trading
- Joint Implementation (JI)

Under the CDM, an industrialized country (Annex I country) having a binding emission reduction target, with technology for reduction of emissions of Green house gases can invest in projects both reducing GHG emissions and contributing to the sustainable development in Non-Annex I countries, can claim credit for the reduction in emission that the project achieves. Annex I country receives Certified Emission Reductions (CERs) and Non-Annex I country receives revenues from CERs (one CER refers to one Ton of CO₂ equivalent avoided in a CDM project). Greenhouse gases considered under CDM include carbon dioxide, methane, nitrous oxide; hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride.

The concept of CDM was developed with two main purposes.

- Help Kyoto-participating countries to reach their emission reduction commitments by investing in emission reduction schemes in developing countries which are less expensive compared to reducing emissions in developed countries.
- Aims to aid countries not participating in Kyoto also develop sustainably through technology transfer and development.

The key man made Green House Gases, whose emission are to be controlled under Kyoto protocol are Carbon dioxide, Methane, Nitrous oxide, Hydrofluorocarbons, Perfluorocarbons and Sulphur hexafluoride. These six gases are to be combined in a "basket", with reductions in individual gases translated into "CO₂ equivalents" that are then added up to produce a single figure. Of these gases, CO₂ is the maximum emitted GHG, as most of the human activities end up in directly or indirectly emitting CO₂. The 2014 average annual concentration of CO₂ in the atmosphere (data from Mauna Loa Observatory) is 398.55 parts per million (ppm). The 2013 average was 396.48 ppm. For the past decade (2005-2014) the average annual increase is 2.1 ppm per year. The average for the prior decade (1995-2004) was about 1.9 ppm per year.

In a simple sense, any activity which directly or indirectly minimises the generation of manmade GHG can be considered for a CDM project. For any project to become eligible for CDM benefit, it should satisfy the different criteria

stipulated by the CDM Executive Board (EB) of UNFCCC. These criteria are being revised / updated on a continuous basis by the EB. The major CDM eligibility criteria are.

- Should involve at least one GHG covered by the Kyoto Protocol
- Emission reductions to be measured against a Baseline
- Should contribute to the sustainable development objectives of the developing country. The main objective of CDM is to help Annex 1 countries to meet their emission reduction objectives in a cost-effective way and contribute to sustainable development of the host country
- Certain project types like nuclear projects are not eligible for CDM benefit.
- Non diversion of official developmental assistance
- Other environmental benefits
- **Additionality:** The emission reductions of the project must be additional to any that would occur in absence of the project. Financial additionality specifically compare financial returns of a project with a benchmark or alternative and will be satisfied only if the viability of the project is established after considering the CDM benefit.
- The Clean Development Mechanism, established under the Kyoto Protocol, has helped to establish a global market for greenhouse gas (GHG) emission reductions. The CDM was welcomed and raised expectations (Kaupp, Liptow et al. 2002) especially in developing countries, for delivering sustainable development benefits including investments, technology transfer and contributions to poverty alleviation. It is documented that this involves a trade-off between the two goals of the mechanism in favour of producing low-cost emission reductions at the expense of achieving sustainable development benefits (Brown, Adger et al. 2004).

CURRENT STATUS OF CDM

With the completion of the first commitment period and uncertainties regarding the follow up plan, CDM market became unsteady and the market prices of Certified Emission Reductions (CER) are at rock bottom. Low demand for CERs due to weak emission reduction targets and over-supply of carbon credits mainly due to soft rules in certain areas of CDM during the first commitment period also contributed to the current status. Ban on HFC-23 and Nitrous Oxide by European Union also affected the CDM market in post 2012 scenario, as a considerable quantity of emission reductions were achieved during the first commitment period by the curtailment of these GHGs. More such restrictions are expected in future.

To find a solution , both the problems of lack of demand due to insufficient ambition and the over-supply have to be addressed. The non-support from one of the maximum GHG emitting country ‘US’ in the move also has affected the overall effectiveness of the scheme. In the Lima Conference 2014 at Peru too, critical measures like review and external monitoring of intended Nationally Determined Contributions (INDCs) could not be effectively concluded. A clear decision regarding the second commitment period from 2013 to 2018 and its follow up action plan is required to improve the situation. Although a global consensus is still under discussion, the regional importance attached to the issue of climate change in all corners of the world and the actions being initiated at national levels are a real achievement in this direction.

Even though the climate change issue remains as one of the most discussed subject world over, consensus is evading, as a solution satisfying the interests of all 'concerned parties' could not be finalized. On global emission reduction angle, voluntary principles approach has not been fully effective in achieving the results expected during the first commitment period. In the post 2012 scenario, there is an increasing number of governments (local, national and regional) intend to utilize market-based policies to address greenhouse gas emissions. In addition to the established emission trading systems in Europe, New Zealand, and regions in the United States of America, systems are evolving in Australia, Canada, China, Kazakhstan and South Korea. Crediting programmes are also emerging, including bilateral mechanisms between developed and developing countries as well as a range of offset protocols. There is a growing concern that a significant part of the credits generated by the CDM do no reflect real, verifiable emission reductions and that it is inadequate to assist developing countries in their transition towards a low-carbon economy(Wara ,2008).

For India, which is the second largest contributor of Certified Emission Reductions (CERs) in the carbon market during the first commitment period, significance of a new market based mechanisms is enormous. Decision of European Union to focus on CERs from Least Developed Countries in the post Kyoto scenario can largely cut out fresh demand for CDM projects in other developing countries, especially China and India. In the race for maximizing CER generation during the first commitment period, the CDM has shifted its focus to a mechanism which favours projects which seize the cheapest opportunities for emissions reductions, regardless of whether they lead to a long-term structural change away from fossil fuels (Lohmann, Larry; 2008).

Planning for CDM in the post 2012 scenario was deliberated in & Cancun conference (COP-16 in 2010) & Durban Conference (COP- 17 in 2011). One of the major complaints against CDM procedure during the first commitment period was its complicated operational procedures. It is suggested that the new reforms should not further complicate the operational procedures for the second commitment period. Another decision adopted since the Cancun conference is the proposal to develop standardized baselines, which can result in reduction of transaction costs and reduced time requirements associated in project registration. (Decision 3/CMP.6 @

<http://unfccc.int/resource/docs/2010/cmp6/eng/12a02.pdf>

CACOPHONY OF DEVELOPMENTS

Tracing the history of development world over and sketching an outline for an elaborated model of sustainable development for future is marred by the vestiges of colonial rule, plundering of wealth, skewed development concerns, scant respect for environmental concerns as the world stands in different platforms of developed, developing and under developed edifices.

CDM was propagated to bring a new order for development in the changing world. The sustainable development objectives of the project implementing country is expected to achieve by transfer of technology and financial resources, improvement in energy efficiency & conservation, poverty alleviation through employment generation and environmental side benefits. The race of manipulations for fixing the blame of the situation between the nations at different stages of development has made a cacophony in the rhythm that was supposed to take care of sustained growth of flora and fauna with a planetary approach.

Given the contemporary political economic growth realities, the push for low carbon regime by the developing world as the new world order in energy, is apprehended as unequal approach by the developing world. Hence the CDM

formulations work out on global platform, is seen as only a task of putting an insurmountable obstacle to meaningful poverty reduction policies for the new developing countries in the horizon.

UNEP's report on the state of the planet's health reviews the state of Earth's natural resources, from the atmosphere and water, to land surfaces and biodiversity. It concludes that instead of being used and maintained as a tool for the sustainable development of human populations, the environment is being sucked dry by unsustainable development.

Ref: UNEP Reports

Consumption patterns among regions are changing with the emergence of new economies and powers such as China, India, Brazil, South Africa and Mexico. Its rapid economic development is influencing global patterns of resource production and consumption, with both environmental and geopolitical consequences (Grumbine 2007). In the pursuit of self sufficiency and building up domestic capacity enhancements, the emphasis on environment friendliness of technology was not really focused by many countries during the last century, leading to distorted growth after-effects which is now surfacing as climate change blueprints. The ways in which different nations are pursuing their development agenda without much concern for environmental protection is highly non-conducive for agreeable solutions to climate change. Pretension of the different nations to be unconcerned to climate change at different phases of development without ceding, paves the urgent need to think of an agenda for finding solutions for climate change analytically and empirically.

PERCEPTIONS ON DEVELOPMENT

Sustainable development can be explained as a model in which Social, economic and ecological requirements are given equal priority. In this development model the conflict between economy and ecology is resolved while meeting social needs. Lynam and Herdt (1989) defined sustainability as: "the capacity of a system to maintain output at a level approximately equal to or greater than its historic average, with the approximation determined by the historical level of variability."

The ecologicistic view point 'Ecology sets the limits for social needs' and economist view point of 'Economic growth is fundamental to social cohesion & environment protection' are of conflicting in nature. The sectored approach in both these cases are to be addressed in the concept of Sustainable Development.

Sustainability requires that humans have to recognize the simple facts of ecological dependency in development. Based on Amartya Sen's "development as freedom" dictum (1999), we create options for the future by creating options for today's poor because more options will drive greater development. In this political model of sustainability, sustaining opportunity for the future requires investing in individual dignity today. Hence for this approach it complements that a political model needs to be developed for the issues like climate change.

APPROPRIATE TECHNOLOGY & SHARING

Initially technologies were developed to satisfy the basic needs of the society to survive, endure and prevail. Subsequently the focus of technology was shifted to profit motives. The appropriate technology should be available to appropriate users in developing & under developed world at affordable price to for a marked change in climate change mitigation measures. Pellegrini (1979) suggested that a technology should be considered appropriate "when its introduction into a community creates a self-reinforcing process internal to the same community, which supports the growth of the local activities and the development of indigenous capabilities as decided by the community itself" (p. 2).

In the modern world, industrial growth and development, irrespective of the scale should supplement and reinforce the eco balances in the enterprise initiative. The Gandhian idealism and perspective that "any concern with goods requires mass production, but concern with people necessitates production by the masses" highlights the intrinsic feature of what is good for masses and to the point concept of being in symphony with nature.

The mechanisms for technology transfer are to facilitate the support of financial, institutional and methodological activities. The rationale that the modern technology available is most efficient and effective needs to be examined by governmental intervention and institutional watch so that the environment friendliness angle of the development should be kept as prime focus. Technology transfer to third world should be based on eco rating and planning of clean discounts for adaptation, or else the adaptation of non- clean inferior technology would make the developing world pay more in long run, by the impacts on natural resources depletion. Appropriate technology for development should be able to address environmental, energy, resource and technological justice during implementation.

Has the market angle of Clean development concept over shadowed the real goals?..

CDM's two goals are to make it cheaper for developed countries to achieve their Kyoto reduction targets and to promote 'sustainable development' in developing countries. Under CDM, industrialized countries can comply with their emission reduction targets at a comparatively lower cost by implementing emission reduction projects and receiving credits for emissions reduced, as long as administration costs are low.

The CDM is a policy innovation where the involvement of private actors has a decisive role in the environmental governance mechanism. Role of private actors like consultants, validators (DOE), verifiers (DOE) and the project participants are critical in the CDM project cycle. Here the conflict of interest between the different stakeholders in CDM implementation is an area of concern. Project monitors and verifiers are being controlled & financed indirectly by those who are supposed to be monitored. It cannot be totally ruled out that the conflict of interests might have created incentives to approve project and validation of credits without considering the strict sense of sustainability (de Sepibus; 2009). Though more detailed verification rules have been laid down, it is doubtful that the current institutional and procedural safeguards are sufficient to guarantee an ideal system for CDM.



Figure 1: CDM & Sustainability

Government mechanisms have a very limited role in the corroboration of CDM projects and practically no control on technology selection or project implementation measures at national or state level is practiced. There are viewpoints that Developed countries are exploiting this mechanism to market their technologies to under-developed / developing countries, which may not be the best for the purpose.

SUSTAINABLE DEVELOPMENT MECHANISMS – A NEW WORLD ORDER

Even though there are ample potential to promote sustainable development utilising foreign investment flows to developing countries, the effectiveness of implementing the sustainable development concept is an area, which lacks proper quantification. Almost all the present initiatives including CDM are market based mechanisms with conflicting interest of stakeholders and hence may not be fully effective in the transition of world to a low carbon economy. Development of the third world countries should not be restricted citing present environmental concerns alone. The need of the hour is one world order - one platform for all developmental concepts. Irrespective of the country's development status, all developmental activities should be viewed and treated alike. Each country has the primary responsibility for its own economic and social development and based on its national policies. Under-developed and developing countries need more resources for meeting the basic needs of their growing population. The concept and approach to sustainable development will be different for countries at different stages of development. Sustainable Development Goals are to be accompanied by universally applicable targets, taking into account different national realities, capacities and levels of development.

Countries across the globe are committed to create a new international climate agreement by the conclusion of the UNFCCC - Conference of the Parties (COP21) in Paris in December 2015. In preparation, countries have agreed to publicly outline what post-2020 climate actions they intend to take under a new agreement, known as their Intended Nationally Determined Contributions (INDCs). INDCs will reflect each country's ambition for reducing emissions, taking into account its domestic circumstances and capabilities to address climate change mitigation and adaptation measures.

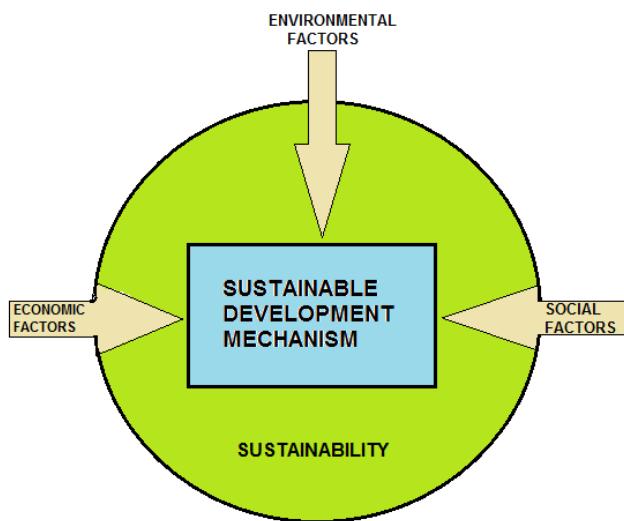


Figure 2: Sustainable Development Mechanisms

People are at the centre of sustainable development and, in this regard, Rio+20 promised to strive for a world that is, equitable and inclusive, and committed to work together to promote sustained and inclusive economic growth, social development and environmental protection to benefit all . (Sustainable development knowledge platform)

Developing and under developed countries need additional resources for sustainable development. There is a need for significant mobilization of resources from a variety of sources and the effective use of financing, in order to promote sustainable development.

The market focus of 'Clean Development Mechanism' has to be shifted to 'Clean development' concept with more focus on sustainability by improving the present systems, so that the project can turn out to be a Sustainable Development Mechanism (SDM).

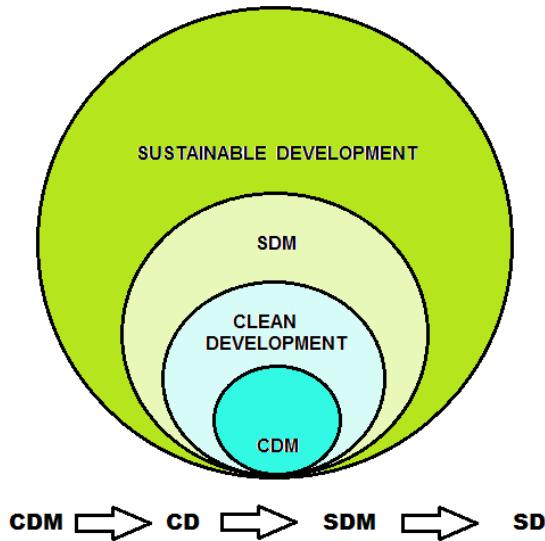


Figure 3: SDM for a New World Order

For marching towards sustainable development goal, the first priority should be to eradicate extreme poverty by implementing nationally appropriate social protection systems. The 'basic needs approach' is considered as one of the major practices to measure development in countries. Measuring the ability of the nation to meet the basic needs of its population. Availability and economics of food for inhabitants is one of the prime areas of focus in most of the countries of the present world.

DEVELOPMENT TO MEET BASIC NEEDS: FOOD EFFICIENCY

The Food energy efficiency factor is going to be one of the critical issues that needs to be monitored, as it is going to be one of the factors in calculating the climate change index in days ahead. Food energy efficiency can be expressed as the ability to reduce and minimize the loss of energy in food in its various interspersed transactions from harvest to actual processing to consumption. This is quite a challenge as it needs the food chain to travel in the optimal energy path thereby minimizing the carbon foot print.

But the tragedy of the growth story in food production is that nearly one third of food produced is wasted or lost. The decrease in edible food mass at the production, post-harvest and processing stages of the food chain is considered as 'food loss' and the discard of edible foods at the retail and consumer levels is 'food waste'. This represents a big challenge to the development pathways and also causes serious environmental impacts. The environmental impacts of food loss and wastages into societal costs, measured in monetary terms really should figure in the mathematical model of development costs.

"Industrialized and developing countries dissipate roughly the same quantities of food – respectively 670 and 630 million tonnes," but: "Overall, on a per-capita basis, much more food is wasted in the industrialized world than in developing countries. A report by FAO estimates that the per capita food waste by consumers in Europe and North-

America is 95-115 kg/year, while this figure in Sub-Saharan Africa and South/Southeast Asia is only 6-11 kg/year," (<http://www.fao.org/save-food/resources/keyfindings/en/>)

The figures are alarming and clearly demonstrate that in the cacophony of food sustenance and food security by the developed and rapidly developing world, the impacts of climate changes are unseen. Investments in reduction of food loss and food wastage by planning and scheduling the food chain in a proper way will pay economic, environmental and social dividends. In the present world, until and unless specific focus is given to develop sustainable ways & means to improvise food production, distribution and transportation matrix, the clean development mechanism in the food chain won't be "clean" and the price paid in natural resource degradation would be severe. Water management, renewable energy at affordable cost, mitigation and adaptation activities on climate change, urbanization aiming sustainable cities, enhancing carbon sinks etc are the other major priority areas.

THE APPROACH

The concept and theoretical base of CDM may be considered for planning a more effective Sustainable Development Mechanism by shifting the focus from 'market mechanism' to a model for a low carbon economy for the whole world. The approach can be broadly focused into two classes, at macro level (world order) and micro level (within each country). At the macro level, efforts should be on

- Developing an international group (preferably under United Nations) as a coordinating organisation with a single point agenda of sustainable development. The role of this organisation should be gathering and maintaining a database of technology & resources, building resilience at country level, evaluating the social economic and environmental factors for a decision making in implementing SDM.
- A 'one world order' or a 'common platform' is essential for the successful implementation of the Sustainable Development concept to the whole world.
- Technology selection and transfer should be planned based on the best available scientific data and cost benefit analysis. Technology to be made available at affordable price to developing countries.
- Cost of technology, considering the need to protect Intellectual Property Rights (IPR), is an area of concern in this model. Here the industrialized world may have to take initiatives in maintaining a financial support similar to Green climate fund.
- Governments also should improve their knowledge base on sustainability, considering their strengths and weaknesses.
- Developmental rights of 3rd world should not be restricted on emission norms alone.
- Defining and generalizing the basic tenets of the SDM techniques by development of standardized international procedures at global platform level to improve quality of life.
- Financial support for the Least Developed Countries may be planned analogous to UNFCCC mechanisms

For a Low carbon Growth-planning, at country level it needs more focus on energy efficiency, waste management, renewable energy initiatives, regulatory measures, adaptation initiatives, technology transfer and mapping of carbon intensity. At country level, more focus should be more on the implementation angle.

- Country's GDP should have a green index for growth by promotion of clean & green, urbanization and industrialization
- Clean & green building techniques and energy efficient urbanization should be focused for meeting the basic needs including food, water, shelter, transportation and waste management
- State wise and national level audit of carbon emissions needs to be mapped with targeted reduction aims along with green funds
- National planning in sectors of fertilizer, food, oil etc to make it more green with well spread growth of production & distribution infrastructure all over country

CONCLUSIONS

Considering the increasing level of GHGs in the atmosphere and the delay between emissions and its impact on climate, likelihood are quite high that more warming is inevitable. The race for development based on various national centric ideologies and aspirations has made the different factions of the world stick to their ideologies and methodologies of development, which can mute the urgent need for a rhythmic global synergy, in mitigation of factors, detrimental to sustainable development. Experience in World Bank has shown that without thorough institutionalization of the social perspective in policy and procedure, the gains made might only be temporary (Dale, Taylor, Lane, 2001).

CDM was propagated to bring a new order for development in the changing world. Even though the climate change issue remains as one of the most discussed subject world over, consensus is evading, as a solution satisfying the interests of all 'concerned parties' could not be finalized. Rethinking development and developmental studies from a scientific social and historical perspective will provide opportunities for CDM specialists to engage in new debates and to reposition themselves to a more practical approach in combating climate change. The stimulating component for the world to come on a single platform for combating climate change is yet to be evolved by consensus.

The concept and theoretical base of CDM may be considered for planning a more effective development order by shifting the focus from 'market mechanism' to a model for a low carbon economy for the whole world. The Clean Development Mechanism concept needs be upgraded and replaced with a clarion call to a Sustainable Development Mechanism (SDM) concept where the prime focus is given to environment, society and Sustainability than the market based developmental mechanisms which promote a fierce conflict of interests. Making available the new skills and technologies to the sustainable development of society by bonding to a common cause can only redeem in worthwhile change in CDM.

REFERENCES

1. Brown, K., Adger, N., Boyd, E., Corbera, E. and Shackley, S. (2004), 'How do CDM projects contribute to sustainable development?', Technical Report 16, Tyndall Centre for Climate Change Research
2. Carson. R. (1962), *Silent Spring*. Houghton Mifflin, Boston.
3. Commoner, B. (1971), *The Closing Circle*. Bantam Books, New York.
4. Dale A, Taylor N, Lane M, 2001. *Social Assessment in Natural Resource Management Institutions*, CSIRO Publishing
5. De Sepibus .J, 2009, 'The environmental integrity of the CDM mechanism – A legal analysis of its institutional and procedural

shortcomings', Working Paper No 2009/24 MAY 2009

6. Georgescu R., 1971. *The Entropy Law and the Economic Process*, Cambridge: Harvard University Press
7. Grumbine, R. (2007). *China's emergence and the prospects for global sustainability*. In BioScience 57 (3): 249-255
8. Kaupp A.H, Liptow , Michaelowa, A , (2002), ' CDM is not about subsidies, it is about additionality', *Energise 1,3 : 8-9*
9. Lohmann, Larry 2008, 'Carbon Trading and Climate Justice and the production of ignorance: ten examples', *Development*, 2008, 51, (359–365)
10. Lynam, J. K. And Herdt, R. W. (1989) "Sense and Sustainability: Sustainability as an objective in international agricultural research", *Agricultural Economics*, vol. 3, pp381-398
11. Papalia Diane E., Sally Wendkos Olds and Ruth Duskin Feldman (2007), *Human Development* (Tenth Edition by Paperback.
12. Pellegrini, U. (1979). *The problem of appropriate technology.*, A. De Giorgio &C. Roveda (Eds.), 'Criteria for selecting appropriate technologies under different cultural, technical and social conditions' (pp. 1-5). New York: Pergamon Press.
13. Rev. Samuel Asiedu-Amoako and Michael Kwadwo Ntiamoah, 'African Spirituality and Sustainable Environment: A Discourse on African Ecological Theology. JECET; March 2015-May 2015; Sec. A; Vol.4.No.2, 526-535
14. Sen, Amartya. (1999). *Development as freedom*. New York: Random House.
15. UNEP (2002). *Global Environment Outlook (GEO-3)*. United Nations Environment Programme, Nairobi
16. UNEP (2005a). *GEO yearbook 2004/2005*. United Nations Environment Programme, Nairobi
17. UNEP (2005b). *One Planet Many People: Atlas of our Changing Environment*. United Nations Environment Programme, Nairobi
18. UNEP (2006). *Avian Influenza and the Environment: An Eco-health Perspective*. Paper prepared by David J. Rapport on behalf of UNEP,
19. Wara, M. W. and Victor, D.G. (2008), 'A realistic policy on international carbon offsets', *PESD Working Paper 74*